“The Earth in your time is getting warmer—why is your climate changing and what will it be like in the future?”

Understanding Climate Change

It's important to understand the difference between weather and climate if you are to understand climate change. Essentially, weather is what happens day to day, while climate is a long term average (often 30 years is used). That means that you can have a cold snap during a phase which is generally getting warmer and it does not mean global warming is a myth! Or as it is put in a quote which the Meteorological Office use:

> In the words of Robert Heinlein, "Climate is what you expect, weather is what you get". Perhaps even more simply, "Weather is how you choose your outfit, climate is how you choose your wardrobe".

The Meteorological Office have a good guide to weather and climate at:

https://www.metoffice.gov.uk/climate-guide

including a video clip which should be accessible to UKS2 and older. You can click through to lots more resources from them around climate, climate change, the water cycle and some great infographics of the evidence for changing climate.

The Guardian produced a digest (in 2014) of how to teach climate change which can be found at: https://www.theguardian.com/teacher-network/teacher-blog/2014/mar/03/how-to-teach-climate-change

Rainforest Alliance discuss how to talk climate change to children without inducing tears and panic: https://www.rainforest-alliance.org/articles/how-to-talk-to-kids-about-climate-change

If you want the most up-to-date and internationally agreed information about climate change, the place to find it is from the Intergovernmental Panel on Climate Change (IPCC): https://www.ipcc.ch/

Understanding Climate Change…. continued

OPAL have some great climate (and weather) resources, including Q&As, a quiz and climate activities at: https://www.opalexplorenature.org/OPALClimateCentre

Climate change will impact most strongly on the poor, so aid agencies are very involved in climate change action:

OXFAM have lesson resources, quizzes and films about climate change and poverty some of which have an interesting focus on the differential impact on women https://www.oxfam.org.uk/education/resources/. The resources include ways to think about taking action. To go with this, **UNICEF** have a focus on climate change and children: https://www.unicef.ca/en/climate-change-and-children-taking-action-save-lives. **CAFOD** are obviously of particular use to Catholic schools and in particular make links to Laudato Si, Pope Francis' Encyclical on the Environment. Their KS3 resources include a Climate Action Game (https://cafod.org.uk/Education/Secondary-and-youth-resources/Climate-Action-Game) and a 60 minute workshop on using comics in campaigning on climate change (https://cafod.org.uk/Education/Secondary-and-youth-resources/Comics-session). Either might also be made suitable for higher achieving UKS2 groups.

National Geographic Kids have a good explanation of climate change aimed at children: https://www.natgeokids.com/uk/discover/geography/general-geography/what-is-climate-change/ and some activities and ideas for what children can do themselves: https://www.climaterealityproject.org/blog/just-kids-what-climate-change-and-what-can-i-do

Understanding Climate Change…. continued

It can be depressing to think about what is happening to our climate and the environment more broadly. You may have heard of calculating your carbon/environmental footprint to see what impact you are having—you can do that for example through: http://www.parkcitygreen.org/Calculators/Kids-Calculator.aspx

A more positive approach could be to calculate your carbon handprint—http://www.carbonhandprint.org— what are the positive things you are doing to help the environment? There is a sheet to help you to do this at: http://climatechangeconnection.org/wp-content/uploads/2018/04/Ecological-Handprint-2018.pdf

If your pupils need to be convinced that young people can make a difference (and with the slight danger of bringing on a climate strike) you could introduce them to the campaigning work of Greta Thunberg, the Swedish activist teenager: https://www.ted.com/talks/greta_thunberg_the_disarming_case_to_act_right_now_on_climate

One positive thing you can do for the climate and the environment more generally is to grow plants. Trees take up lots of carbon as they grow and wildflowers help bees and other insects and form the base of foodwebs. You can find ideas at: https://www.wildaboutgardens.org.uk

Nature Activities—February

There are lots of great winter time related activities here...

https://www.stem.org.uk/resources/community/collection/11076/snow-and-ice

Make your own snow…

https://playtivities.com/how-to-make-snow/

A nice frost activity is …

https://littlebinsforlittlehands.com/how-to-make-frost-can-winter-science/

Or make your own frost window...

https://gb.education.com/activity/article/Make_Frost_the_Windows/

Jack Frost for younger children…

https://www.twinkl.co.uk/resource/t-t-2549088-ks1-jack-frost-short-story-cards

https://mscrossansroom.wordpress.com/2014/01/24/art-jack-frost/

Nature Activities—February

What wiped out the dinosaurs?

This question is a great way to show how science works, from evidence providing ideas to coming up with predictions and theories, which are debated and altered as new evidence comes to light. You can run this in class as a enquiry based learning activity by showing a presentation of images and statements and getting the students to choose what fits best. With older students, information could be added in files so they can work to their own pace (to create drama you could deliver the evidence in timely pace to the teams as if just discovered in real time)

Most people say it was a big meteorite…evidence here and images

https://scienceblogs.com/startswithabang/2009/04/27/what-wiped-out-the-dinosaurs

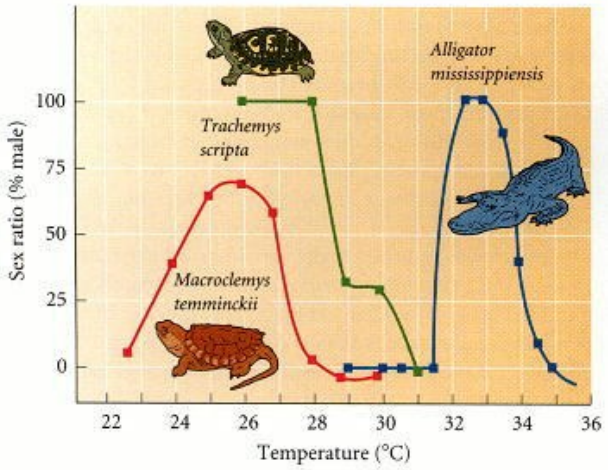
BUT others say it could've been huge changes in climate...

https://iceagenow.com/Did_climate_change_kill_the_dinosaurs.htm

You could ask the children to explain what they believe and say what evidence they found to support it.

Could a change of climate wipe out the dinosaurs?

Well if turtles and crocodiles, (which were around when dinosaurs walked the land) are anything to go by- Yes ! Dinosaurs may have died out if the egg temperature varied due to changes in climate…could this spell the end for animals alive today that use temperature dependent sex determination?



https://www.ncbi.nlm.nih.gov/books/NBK9989/

Nature Activities—February

What was our climate like in the past?

We can show the children what the climates of Britain would have looked like back in time. We can ask them to match images of what the climate meant and what life was around.

Britain's ice ages:

https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3585.html

https://www.dailymail.co.uk/sciencetech/article-5803855/Interactive-map-reveals-Britain-looked-like-ice-age.html

Britain in a warmer climate with lagoonal, lake and fluvial environments:

https://www.bgs.ac.uk/discoveringGeology/time/timechart/phanerozoic/cretaceous.html

Britain in hot, dry desert conditions:

https://www.bgs.ac.uk/discoveringGeology/time/timechart/phanerozoic/permian_triassic.html

The British Geological Survey website has lots of great information.

What will our climate look like in the future?

Then as a class, discuss and create an image to reflect the climate of the future.

This activity can be turned into a series of stained glass windows for your classroom using bits of tissue paper collaged inside black pen outlines on acetate sheets (like florists wrap) from the different climates of Britain. An alternative to this would be to make tapestries for the classroom.

Nature Activities—February

United Nations Sustainability Goals

The United Nations Sustainable Development Goals link global challenges we all face and structure ways in which we can find solutions. Lots of organisations use them to talk about the work they are doing around poverty, health, gender equality and education, but also climate action, life on land and in the seas, energy and production. They can form a great way to start talking about international efforts to work to a better future. The UN's own website is a great starting place for this: https://www.un.org/sustainabledevelopment/sustainable-development-goals/ with facts and figures, targets, 'why it matters' sheets and links to follow.

You can download a Sustainable Goals in Action app from https://sdgsinaction.com/ which gives you news and ideas and allows you to create and join events.

Literacy Activities—February

A collection of poetry for EYFS and KS1 around winter can be found here: https://www.tes.com/teaching-resource/a-collection-of-winter-poetry-suitable-for-eyfs-and-ks1-11776589

For older students, you could look at some rare and Most Wonderful Words for Winter (from https://www.merriam-webster.com/words-at-play/winter-words/sitzmark) such as 'Hiemal,' 'brumation,' & other rare wintry words

We find ourselves with a large number of words having to do with describing winter. If you are tired of describing things as *wintry*, you can instead say that they are *hiemal*, *hibernal*, *winterish*, or *brumal*.

Another lovely word, dealing with snow, is *niveous*, which means “of or relating to snow: resembling snow (as in whiteness): snowy.”

Some people find that knowing a word for a certain thing makes them pay it greater attention. Chances are very high that, after having slogged through the cold and gloom of several months of winter, you will not need to be reminded that spring is just around the corner; in the event you are the sort of person who overlooks the slight warmth of a breeze foreshadowing the end of winter, or misses the crocuses beginning to flower, it may be handy to carry around with you a word for the beginning of this new season. *Primaveral* means: of or relating to early spring.

Even though the English language is almost indescribably rich and varied in terms of its range and vocabulary, we have a relative dearth of words to apply to the physical evidence of doing a specific thing poorly. In light of this, words such as *sitzmark*, which refers explicitly to the dent or hole left in the snow by a skier’s rump, should be celebrated.

Brumation (the state or condition of sluggishness, inactivity, or torpor exhibited by reptiles (such as snakes or lizards) during winter or extended periods of low temperature) is the creation of the American zoologist Wilbur W. Mayhew, who coined in a 1965 paper on the hibernation of the Horned Lizard, as he thought there needed to be a term that distinguished between the wintertime habits of cold and warm-blooded animals. There is, as best I can tell, no independent word to describe the winter sluggishness and inactivity of people.

Maths Activities—February

Following on from November Dippy Challenge focused on weather, if you got a school weather monitoring station, you can use this to yield data to work with in your maths lessons.

There are a plethora of suitable links to bring maths in with talk of weather and climate, first and foremost using graphs to show temperature changes and climate changes, especially with older children (https://plus.maths.org/content/tags/mathematics-and-climate-change) but also things like looking at angles of snowflakes https://deceptivelyeducational.blogspot.com/2012/12/its-snowing-angles.html

For younger children, there are some lovely winter maths activities here:

https://www.supplyme.com/products/snowman-counting-file-folder-game-a3858

http://www.makinglearningfun.com/themepages/SnowmanTemperatureSequencing.htm

http://mathwire.com/seasonal/winter05.html

http://www.makinglearningfun.com/themepages/SnowmanAdditionFun.htm

https://www.themeasuredmom.com/marshmallow-math/

Art, Arts Award — February

A great cross-curricular creative curriculum arts award challenge can be based around learning about climate change and then in teaching others its significance, such as in a journalistic task– research (as a class) then write and perform their own Newsround piece– record using ICT and upload to school site. Or writing for a newspaper article. You can provide material for the children to edit (cut out the bits they want to use and then put in a sequence) and add images to (they can research them, create the art, or be provided with a selection to choose from)...

Artistic responses to climate change can be really powerful and a great way to study and covey the significance of climate change and start conversations on climate change:

https://www.theartnewspaper.com/news/artists-deliver-climate-change-message

http://theconversation.com/can-art-put-us-in-touch-with-our-feelings-about-climate-change-77084

Or if you are really clever, you can use graphical data on climate change as a basis for your art! Such as:

https://www.pbs.org/newshour/arts/artist-captures-climate-change-in-7-stunning-watercolors

https://www.smithsonianmag.com/arts-culture/these-watercolor-paintings-actually-include-climate-change-data-180958374/

https://www.climate-lab-book.ac.uk/

Art, Arts Award — February

Design challenge: what will animals of the future look like?

Discuss adaptations to environments of animals and design your own species that is alive today but has had to adapt to the future.

Have a class discussion about what the future environment might be like—you could use this as a way of pulling together lots of evidence about environmental change.

Investigate how animals today are adapted to some of the conditions you expect for the future and use that to help you to work out how creatures may evolve. Look at examples, such as tawny owls: https://www.smithsonianmag.com/science-nature/ten-species-are-evolving-due-changing-climate-180953133/

You can find lots of information about how animals are responding to climate change from the World Wildlife Fund: https://www.wwf.org.uk/get-involved/schools/resources/climate-change-resources and

https://www.worldwildlife.org/pages/wildlife-and-climate-change-educator-resources

Crest Awards — February

Crest Awards (https://www.crestawards.org/) are run by the British Science Association and support science work and working scientifically. Star level is aimed at KS1; Superstar at KS2 and Discovery at KS3 and all have pre-made downloadable challenges which you can put together to achieve the awards. Beyond that, Bronze, Silver and Gold levels give more scope for individual projects. We are working to produce a Crest accredited challenge for when you visit Dippy at the Great North Museum: Hancock to make up one of these activities on your journey. The awards are cheap to do (£1 per child for Star and Superstar and £3 each for Discovery) and you can record the activities online to get the children's certificates and badges.

Conservation challenges

Star (https://www.crestawards.org/crest-star)

Scrapyard Scraps

Superstar (https://www.crestawards.org/crest-superstar)

Things to look out for in February

early bumblebees

ladybirds

catkins

listen for birdsong, such as thrushes and robins and keep your feeding stations stocked up whilst insects are in short supply!

it's still quite late sunrise and early sunset—why not watch the sun rise and set on the same day?

while it's still getting dark quite early, do some stargazing on a clear night: https://www.darkskydiscovery.org.uk/

after a winter storm is over and it's all calm again, try doing some beach combing to see what you can find washed up. It's best to do this as the tide goes out, both for safety and to find more things. Don't try doing this while the sea is still rough!